

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 19, 21-25, 32-35, 37-40, and 58-89 are presently active in this case, Claims 19, 22, 33-35, and 37 having been amended and Claims 59-89 having been added by way of the present Amendment. The Applicants submit that support for the claim amendments and additions are present within the disclosure set forth in the originally filed specification.

Claims 19, 22, 33-35, and 37 have been amended in a non-narrowing manner to correct minor informalities.

Claims 19, 21-23, 25, 32-35, 37, 39, 40, and 58 were rejected under 35 U.S.C. 102(e) as being anticipated by Satran et al. (U.S. Patent No. 6,270,292). Claims 24 and 38 were rejected under 35 U.S.C. 103(a) as being unpatentable over Satran et al. in view of Tukala et al. (U.S. Patent No. 5,622,461). For the reasons discussed below, the Applicants respectfully traverse the art rejections.

Independent Claim 19 of the present application recites a tip comprising a first edge corner having a corner angle of less than 90°, and an adjacent second edge corner having a corner angle of less than 90°, wherein the tip is formed of a substantially quadrilateral-shaped plate. Independent Claim 32 of the present application recites a cutting tool comprising a tool body having a distal end, and a plurality of tips mounted to the distal end of the tool body. Each tip of the plurality of tips comprises a plate of substantially quadrilateral shape, where the plate has a first corner having a corner angle of less than 90° and an adjacent second corner having a corner angle of less than 90°. At least one of the first corner and the second corner is arranged to project along an outer periphery of the distal end of the tool body.

The Applicants respectfully submit that the Satran et al. reference does not disclose all of the limitations recited in independent Claims 19 and 32 of the present application. For example, the Satran et al. reference does not disclose a tip formed of a substantially quadrilateral-shaped plate, as recited in Claim 19. Additionally, the Satran et al. reference does not disclose a cutting tool comprising a plurality of tips, where each tip of the plurality of tips comprises a plate of substantially quadrilateral shape, as recited in Claim 32.

The Applicants note that the term “quadrilateral” is defined as “a four-sided polygon” (emphasis added) in Webster’s II New College Dictionary. Additionally, a “polygon” is defined as “a closed plane figure bounded by three or more line segments” (emphasis added). And finally, a “plane” is defined as “a surface containing all the straight lines connecting any two points on it” or “a level or flat surface.”

The Satran et al. reference does not disclose a tip formed of a substantially quadrilateral-shaped plate, as recited in Claim 19, or a plate of substantially quadrilateral shape, as recited in Claim 32. The Official Action cites tip (1) in Figures 1 and 4 of the Satran et al. reference for the teaching of an approximately quadrilateral-shaped plate. However, the Applicants respectfully submit that the cutting insert (1) having front cutting portion (2) of the Satran et al. reference does not include a substantially quadrilateral-shaped plate. In fact, the front cutting portion (2) has adjacent side cutting edges (11) that are at a significant angle to one another, as is evident from a review of Figure 2. Accordingly, the front cutting portion (2), which is a unitary structure in the Satran et al. reference, is not even remotely planar and therefore cannot be said to have a quadrilateral shape. The Satran et al. cannot be said to have a plate having a substantially quadrilateral shape, since no such plate is taught in the Satran et al. reference.

Accordingly, the Applicants respectfully request the withdrawal of the anticipation rejections of Claims 19 and 32.

Claims 21-25, 33-35, 37-40, and 58 are considered allowable for the reasons advanced for Claims 19 and 32 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claims 19 and 32.

Newly added Claims 59-89 are considered allowable as they recite features of the invention that are neither disclosed nor suggested by the references of record.

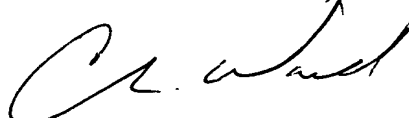
Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Finally, the attention of the Patent Office is directed to the change of address of Applicants' representative, effective January 6, 2003:

Oblon, Spivak, McClelland, Maier & Neustadt, P.C.
1940 Duke Street
Alexandria, VA 22314.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Attorney of Record
Registration No. 25,599



22850

Christopher D. Ward
Registration No. 41,367

GJM/CDW/brf
I:\attycdw\0834\0834 0275\0275.am3.wpd

Marked-Up Copy

Serial No.: 09/639,946

Amendment Filed on: 05/02/03

IN THE SPECIFICATION

Page 44, lines 3-13, please amend the paragraph as follows:

In addition, the arrangement number of [sheets] seats of a tip 101 is not necessarily for [sheets] seats, you may arrange three or five or more [sheets] seats. In case that the [this] end mill 30a is used in each cutting, the base edge portion of tool of the first long tooth 8 which makes perimeter tooth in a sub-tip 101B and the tip portion of tool of the second long tooth 9 which makes perimeter tooth in a third tip 101C and base edge portion of a tool of the first long tooth 8 which makes perimeter tooth in a fourth tip 101D are not overlap with the locus of perimeter of other tip respectively, and this portion will cut work material as a single tooth respectively. And in perimeter tooth of each tip, the other portion will cut the work material as a two sheet tooth.

IN THE CLAIMS

19. (Twice Amended) A tip comprising a first edge corner having a corner angle of less than 90°, and an adjacent second edge corner having a corner angle of less than 90°, wherein the tip is formed of [an approximately] a substantially quadrilateral-shaped plate.

22. (Twice Amended) The tip of claim 19, wherein a cutting edge [partially defining both] extending between the first edge corner and the second edge corner is not parallel to an opposite cutting edge.

33. (Twice Amended) The cutting tool of claim [32] 37, wherein a cutting edge extending from the first corner inward toward the [second] third corner in a radial direction of the tool body is defined as a front cutting edge extending to a rotation axis of the tool body.

34. (Once Amended) The cutting tool of claim 32, wherein:

each tip of the plurality of tips has two opposing cutting edges defined as long cutting edges and another two opposing cutting edges defined as short cutting edges;

one of the long cutting edges in a first of the plurality of tips projecting towards the distal end of the tool body is defined as a first front peripheral cutting edge and one of the short cutting edges in the first of the plurality of tips is defined as a first outer peripheral cutting edge; and

one of the short cutting edges in a second of the plurality of tips projecting towards the distal end of the tool body is defined as a second front peripheral cutting edge and one of the long cutting edges in the second of the plurality of tips is defined as a second outer peripheral cutting edge[; and

the first and second front cutting edges are provided at the distal end of the tool body].

35. (Once Amended) The cutting tool of claim 34, wherein the first and second outer peripheral cutting edges are oriented such that [rotations] rotation paths of the first and second outer peripheral cutting edges overlap when the tool body is rotated around a rotation axis.

37. (Twice Amended) The cutting tool of claim 32, [further comprising] each tip of the plurality of tips has a third corner having a corner angle of less than 90°.

59-89. (New)